

## CLAIMS

1. A method for wireless communication, comprising:
  - 2 positioning a first plurality of slave transceivers within a region;
  - positioning a second plurality of slave transceivers within the region in
  - 4 positions spatially separated from the positions of the first plurality of slave transceivers;
  - 6 receiving at the first plurality and at the second plurality of slave transceivers a reverse radio frequency (RF) signal generated by a mobile transceiver within
  - 8 the region and generating respective first and second slave signals responsive thereto;
  - 10 conveying the first and second slave signals separately to a base station transceiver subsystem (BTS) external to the region; and
  - 12 processing the first and second slave signals conveyed to the BTS so as to recover information contained in the reverse RF signal generated within the
  - 14 region.
2. The method according claim 1, wherein the region is generally unable to
  - 2 receive signals transmitted over the air from the BTS.
3. The method according to claim 1, wherein conveying the first and second
  - 2 slave signals separately to the BTS comprises orthogonally polarizing the signals.
4. The method according to claim 1, wherein receiving at the first plurality
  - 2 and at the second plurality of slave transceivers the reverse RF signal generated by the mobile transceiver and generating respective first and second slave

4 signals comprises down-converting the reverse RF signal so as to generate  
 6 respective first and second intermediate frequency (IF) signals, and wherein  
 8 conveying the first and second slave signals separately to the BTS comprises up-  
 converting the respective IF signals in a master unit to recover the first and  
 second slave signals.

5. The method according to claim 1, and comprising:

2 conveying a forward RF signal from the BTS to a master unit;  
 down-converting the forward RF signal to a forward IF signal;  
 4 splitting the forward IF signal into a first and a second IF signal;  
 delaying the second IF signal;  
 6 conveying the first and delayed second IF signals to the first and second  
 plurality of slave transceivers respectively;  
 8 processing the first and delayed second IF signals to recover the forward RF  
 signal and a delayed forward RF signal respectively; and  
 10 transmitting the forward RF signal and the delayed forward RF signal to the  
 mobile transceiver.

6. Apparatus for wireless communication, comprising:

2 a first plurality of slave transceivers and a second plurality of slave transceivers,  
 which first and second pluralities are spatially separated from one another  
 4 within a region, and which first and second pluralities of slave transceivers are  
 adapted to receive a radio frequency (RF) signal generated by a mobile  
 6 transceiver within the region and to generate respective first and second slave  
 signals responsive to the RF signal;

8 a first master unit, which receives and processes the first slave signal from the  
first plurality of slave transceivers and conveys the processed first signal to a  
10 base station transceiver subsystem (BTS); and

a second master unit, which receives and processes the second slave signal from  
12 the second plurality of slave transceivers and conveys the processed second  
signal to the BTS separately from the processed first signal, such that  
14 information contained in the RF signal is recovered by processing the first and  
second processed signals received by the BTS.

7. The apparatus according claim 6, wherein the region is generally unable  
2 to receive signals transmitted over the air from the BTS.

8. The apparatus according claim 6, and comprising a polarizing antenna  
2 coupled to the first and second master units, which antenna conveys the  
processed first signal and the processed second signal separately to the BTS as  
4 orthogonally polarized signals.

9. The apparatus according claim 6, wherein the first and second plurality  
2 of transceivers comprise respective first and second down-converters which  
generate the first and second slave signals as respective first and second  
4 intermediate frequency (IF) signals, wherein the first master unit comprises a  
first up-converter which recovers the processed first signal from the first IF  
6 signal, and wherein the second master unit comprises a second up-converter  
which recovers the processed second signal from the second IF signal.

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10. The apparatus according claim 6, wherein the first master unit  
10 comprises:

a down-converter which converts a forward RF signal received from the BTS to  
12 a forward IF signal; and  
a splitter which splits the forward IF signal into a first and a second forward IF  
14 signal,  
wherein the second master unit comprises a delay unit which delays the second  
16 forward IF signal,  
wherein the first plurality of slave transceivers comprise respective pluralities  
18 of up-converters which recover the forward RF signal from the first forward IF  
signal and which transmit the forward RF signal to the mobile transceiver, and  
20 wherein the second plurality of slave transceivers comprise respective  
pluralities of up-converters which recover a delayed forward RF signal from the  
22 delayed second forward IF signal and which transmit the delayed forward RF  
signal to the mobile transceiver.